Space Weather Forecast

Issued on Saturday, 18 November 2023 at 01:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Increasing risk of Moderate class flares throughout the period.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has remained Low over the past 24 hours, with the background level x-ray flux gradually increasing to Common class levels. The largest flare was a low level Common class flare, most likely from the new region rotating onto the southeast limb, which is currently classified as a relatively small and magnetically simple region. The only other region on the visible disc is AR3486 which is small and magnetically simple, and is in the western hemisphere. Both regions are stable but also hard to analyse, due to their proximity to the eastern and western limbs respectively. The new region is likely to gain a more magnetically complex classification once it rotates further on the visible disc.
There have been a few CMEs in the last 24 hours but none are expected to be Earth directed.

Solar Wind / Geomagnetic Activity: Solar winds, as measured by ACE and DSCOVR at L1, started at Slightly Elevated levels around 400 km/s but eased down to ambient and is currently around 350km/s. It is possible that a very weak connection to a small coronal hole feature did occur, but if this did happen then the connection was very weak, The strength of the magnetic field was weak throughout, while the important north--south component was often southward directed but also weak. The resulting geomagnetic activity was Quiet.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is expected to remain Low, but with an increased chance of isolated Moderate class flares due to the new region that is currently rotating onto the southeast limb, plus other regions that are expected to rotate onto the visible disc through the period.

Solar Wind / Geomagnetic Activity: The CME associated with the 16/0100 UTC filament eruption may reach Earth late tomorrow (19th) or early day 3 (20th), but confidence is low regarding this. Any arrival is unlikely to produce a significant geomagnetic response.
The solar wind is expected to remain at predominantly background levels for much of today. Slightly elevated wind speeds may occur from late today due to coronal hole influence, from a narrow but yet to be numbered coronal hole feature in the western hemisphere. The influence of this thin coronal hole is likely to wane later in the period.
Geomagnetic activity is expected to be Quiet at first (Kp 0-2) then from late today until late tomorrow or early day 3 (20th) occasional Unsettled intervals are possible. Then from late tomorrow or early day 3 (20th) there is a chance of Minor geomagnetic storm intervals, decreasing to a slight chance on day 4 (21st) due to the possible arrival of the above mentioned CME. However, there is significant uncertainty regarding the arrival time and impact of the CME.

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Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	20	10
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	20	20	25	25
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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